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Book reviews and notices

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Mushrooms of the Midwest. By M. Kuo & A.S. Methven. 2014. University of Illinois Press, 1325 South Oak Street, Champaign IL 61820-6903. <www.press.uillinois.edu>. ISBN 978-0-252-07976-4, 440 p., 833 color photos, paper. Price $39.95.

Slightly over a century ago, North American mushroomers wishing to identify a mushroom from their local field or forest had their work cut out for them. Throughout the nineteenth century, identifications depended on local experts, oft-inaccessible scientific papers (Peck's New York botanical reports spring to mind), or sparingly illustrated British or Scandinavian tomes. Species concepts were almost invariably Europe based. The continent was too vast and mycologists too few to provide anything other than a general nudge in the right direction, so that the first order of business was usually amassing a sizable library before coming anywhere near the 'right' name. 'Iron Guts' McIlvaine (1902), motivated by an earnest desire to share the edible (and warn against the not-so-edible) fungal bounty, was arguably the first to publish a volume devoted solely to North American mushroom identification. Despite its decided eastern bias (and a disconcerting tendency to refer to plants and stems), it did offer the American public a means to key out mushrooms anywhere on the continent.

With the introduction of his 1918 The *Agaricaceae* of Michigan, Kauffman presented one of the first regional mushroom guides. What began as a 'series of surveys initiated in the summer of 1906' developed into a 'manual of considerable size' accessible to serious scientists. Kauffman's formidable and prolific student, A.H. Smith, refined that Michigan agaric manual into shorter and more accessible guides for the entire continent. Since Smith, the continent has welcomed a virtual cornucopia of general field guides, but mushroomers still need a more regional focus to identify their endemic and uncommon mushrooms with any accuracy.

Kauffman and Smith aside, there have been relatively few guides devoted to the central U.S.A. There are a fair number devoted to edible fungi—witness the lively and colorful books by Kuo (2007) and McFarland & Mueller (2009). But my library contains only three more comprehensive guides: Stubbs (1971), covering ~60 central Midwest species; the excellent Horn & al. (1993) keying out 150 Kansas Mushrooms; and the excellent 1989 guide to mushrooms of the midcontinental United States by Huffman & al. (see the review of the expanded 2008 revised edition, MYCOTAXON 112: 498–499).

This new guide to 557 taxa, therefore, is both overdue and welcome. MUSHROOMS OF THE MIDWEST covers 12 states extending "from the cold conifer bogs of northern Michigan to the steamy oak forests of Missouri" or from Ohio in the east to Kansas, Nebraska and the Dakotas in the west. Its authors are well known to legions of mushroom aficionados – Michael Kuo as principal developer of MushroomExpert.com and enthusiastic researcher of all things morel and Andy Methven, Eastern Illinois University professor, *Clavariadelphus* and *Lactarius* expert, and welcome North American foray instructor.

At 8×10″ and 440 pages, MUSHROOMS is not a pocket field guide. However the stiff paper cover reinforced at the spine and semi-gloss paper confer a hardiness appropriate for foray ground and picnic table. This durability does present some drawbacks: the color photos are neither as sharp nor as brilliant as those printed on glossy paper (or viewed on computer screen). The book is divided into 7 parts: introduction, collection and preservation techniques, microscope use, keys, mushroom descriptions, the phylogenetic scheme followed, and a combination glossary and index (with the taxa indexed both by genus and species).

The first three pages outline the effort needed to determine species, in particular noting the hours it took Smith and others to collect and describe them, the many contributions by 'citizen' mycologists, and the strides made through DNA sequence analyses. The next 8 pages briefly outline the equipment and procedures for mushroom identification and study followed by a 6-page guide on using a microscope.

There follow 58 pages of keys: a key to the major groups is followed by keys to the pink-spored gills; pale-spored gills 1&2; *Amanita, Lactarius, Russula,* dark-spored gills 1&2; terrestrial pored; lignicolous pored; chanterelles & trumpets; toothed fungi; puffballs & earthstars; cup mushrooms; morels, false morels, saddles; clubs & corals; and finally 'miscellaneous fungi' [e.g., *Hypomyces,* birds nests, stink horns, witch's butters].

Pages 80–396 cover the fungal taxa. Scientific names stand in easy-to-read upper case black font with the authorities fully spelled out in red upper case.

At least one colour photo—usually two or three—illustrates each species. Entry subheadings include ecology, fruitbody description, spore print color, chemical reactions, microscopic features (always spores, but often other diagnostic features such as pileipellis, cystidia, clamp connections, paraphyses, etc.), and comments.

At first riffle, I was perplexed by what seemed to be a disorganized hodge-podge—ascomycetes inter-mixed with basidios, gilled with pored, conks with puffballs—that obscured the basic organizational scheme: the alphabet. Kuo & Methven, however, explain their rationale:

> We chose this arrangement because contemporary studies have been shifting long-held assumptions about relationships between mushrooms (for example, the polypore *Bondarzewia berkeleyi* ... is more closely related to *Russula ballouii* ... than it is to most other polypores), so that a strictly taxonomic arrangement (phylum, class, order, family, genus, species) would not only seem odd to many readers but also probably be subject to change before the book was actually printed... Contemporary studies also make a traditional guidebook arrangement based on physical features like spore print color, the presence of gills or pores, and so on seem antiquated.

Once this pragmatic decision is accepted, there really is little difficulty in finding a species using the key. Such an arrangement, which is a strong incentive to USE the key, will no doubt frustrate the key-by-photo crowd but is more likely to produce an accurate identification.

The authors do not mention whether the photographs are vouchered by dried specimens, which we hope is the case. I have not taken the time to scrutinize each photo and description, but the photos appear to be accurately identified, although in one or two instances, I wondered why a newer name has not been used [not a *Lactifluus* to be found]! Nonetheless the nomenclature is more up-to-date than in most field guides, particularly given that we must adapt to an exponentially increasing number of name changes. The authors, who follow the taxonomic classification of Kirk & al. (2008), explain their (and our) quandary satisfactorily in their concluding chapter, "The evolutionary picture:"

> By the time the manuscript we're writing right now is sent to the printer, some of the information included in the tables below will have changed—and by the time you are reading this, even more changes may have occurred. The DNA revolution in mycology has only just begun...The tables below include only the genera represented in this book...

Overall, this is an excellent addition to the field guide pantheon, and a very welcome addition to my library.

Horn B, Kay R, Abel D. 1993. A guide to Kansas mushrooms. University Press of Kansas, Lawrence. 297 p., 150 spp.

Huffman DM, Tiffany LH, Knaphus G. 2008. Mushrooms & other fungi of the midcontinental United States [2nd ed.]. University of Iowa Press. 384 p., 300 pl., 284 spp.

Kauffman CH. 1918. The *Agaricaceae* of Michigan. Michigan Geological and Biological Survey, pub. 26-B. 924 p. +172 pl.

Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Ainsworth & Bisby's dictionary of the fungi (10th ed.). CAB International, Wallingford.771 p.

Kuo M. 2007. 100 edible mushrooms. University of Michigan Press. 327 p.

McFarland J, Mueller GM. 2009. Edible wild mushrooms of Illinois and surrounding states. University of Illinois Press. 232 p., 292 pl.

McIlvaine C, Macadam RK. 1902. One thousand American fungi (rev.). [1973 reissued: Something Else Press, Inc.], West Glover VT. 729 p., 182 pl., ~1000 spp.

Stubbs AH. 1971. Wild mushrooms of the central Midwest. 135 p., ~60 plates

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A field guide to Tasmanian fungi. By G. Gates & D. Ratkowsky. 2014. Tasmanian Field Naturalists Club, P.O. Box 68, Hobart, Tasmania 7001, Australia <http://tasfieldnats.weebly.com/bookshop.html>. ISBN 978-0-9578529-2-1, 254 p., colour photos (603 spp.), paper. Price AU$39.95.

Last week's post brought an unexpected jewel to our mailbox. Having the good fortune of being able to visit Australia twice, I have over the years added four beautifully illustrated guides to the venerable Cleland (1934–35) and scholarly four-volume FUNGI OF AUSTRALIA (1996–2003), including Fuhrer & Robinson (1992), Grey & Grey (1995), Bougher & Syme (1998), and Fuhrer (2005). One glance at this new field guide to 603 Tasmanian fungi, however, tells me my next sojourn down-under will be to that fungal paradise south of the mainland.

The authors bring considerable experience to their task, over the past 15 years having made more than 1000 forays collecting and documenting fungi in Tasmania. Genevieve Gates received her doctorate for her study of macrofungi on wood, litter, and soil in a Tasmanian eucalypt forest and is coauthor with Noordeloos of the *ENTOLOMATACEAE* OF TASMANIA (2012); when not foraying for mushrooms, Dr. David Ratkowsky serves as a statistician with the Tasmanian Institute of Agriculture (University of Tasmania).

The book is compact ('A5' or 6×8¼″) and designed for field use. The paper cover is durable and the semi-gloss papers should withstand moisture yet are smooth enough so that every photo is crisp, clear, and brilliantly colored. From the magnificent front cover image of *Aseroë rubra* to 'The Thumbs' on the back, the photos are stunning, virtually all with a focus razor-sharp enough to catch the smallest detail. One minor carp is that the narrow inside margins make it

necessary to hold the book open with both hands to read all of the text, with some left-hand index letters obscured.

The essential introductory section precedes keys to the gilled genera followed by a table of key features (spore print, substrate, stipe, comments) of the gilled genera. Species descriptions include gilled basidiomycetes (alphabetical by genus) followed by non-gilled basidiomycetes in artificial groupings—bird's nests, boletes, chanterelles, coral fungi & clubs, earthballs, earthstars, jelly fungi, leather fungi, polypores, puffballs, resupinates, spine fungi, stinkhorns—and concluding with ascomycetes (also alphabetized by genus). The volume ends with a bibliography, a glossary, the index, and five pages of Tasmania spectacular enough to entice anyone to the island, although the guide will definitely be useful on the main continent to the north.

The introduction covers the different biological strategies—ectomycorrhizal, saprotrophic, pathogenic, parasitic, coprophilous, symbiotic (lichens)—and notes the important diagnostic macrofeatures used in the book—substrate, spore print colour, veils, gills & gill-like structures [with 3 ½ pages of photos of gill types], color changes with bruising, odours. With respect to nomenclature, the authors explain:

> We have used ... Index Fungorum as our source of the most up-to-date names for genera and species. Sometimes we did not adopt the proposed name but used an older synonym because that is the more familiar name or fitted better in the context of the book. The alternative name is given in brackets. For most unknown species we have used a 'tag name' and this is in inverted commas.... The abbreviation 'aff.' (*affinis* – similar to) means that we are not absolutely sure it is this species but it has similar characters, 'cf.' (compare with) is a stronger similarity, 'ined.' means it is in the process of being published and 'nom. prov.' (provisional name) means that it should be given that name when it is published. The rapid rise of molecular work is resulting in name changes of fungi. This is not a problem as these changes can be tracked using Index Fungorum, which gives the current name and synonyms and also the article in which the change of name is proposed.

The description pages each offer 2–3 species with generic names at top. At least one photo (often with detail insets) illustrates each species, accompanied by the scientific name, a short description with comments, and a fruiting season diagram. Descriptions are very brief, but the photos (taken in the natural habitat) are sufficiently clear to permit easy identification. Of particular note is the unusually large and welcome number of *Entoloma* species (16+ pages), a genus usually given short shrift in general field guides. It helps to have an expert author at hand.

This is a honey of a field guide, which I hope to take along the next time I have an opportunity to fly to Tasmania. Buy two, though, if for no other reason than to keep one set of pictures pristine.

Bougher NL, Syme K. 1998. Fungi of Southern Australia. University of Western Australia Press, Perth. 391 p., watercolor drawings, 125 spp.

Cleland JB. 1934–1935. Toadstools and mushrooms and other larger fungi of South Australia, Parts I and II. [Photolitho reprint 1976, A.B. James, Government Printer, South Australia]. 362 p., 77 b&w figs.

Fuhrer B. 2005. A field guide to Australian fungi. Bloomings Books Pty Ltd, Melbourne. 360 p., 548 colour pl., >500 spp.

Fuhrer B, Robinson R. 1992. Rainforest fungi of Tasmania and south-east Australia. CSIRO, East Melbourne. 95 p., ~109 pl.

FUNGI OF AUSTRALIA. **1996.** Volume 1a, Introduction—Classification (eds. AE Orchard, C Grgurinovic, K Mallet), 413 p.; Volume 1B, introduction—fungi in the environment (eds. AE Orchard, K Mallet, C Grgurinovic), 405 p.; **1997.** May TW, Wood AE. Volume 2A, Catalogue and bibliography of Australian macrofungi 1. *Basidiomycota* p.p. , 348 p.; **2003.** May TW, Milne J, Shingles S, Jones RH. Volume 2B, Catalogue and bibliography of Australian macrofungi 2. *Basidiomycota* p.p. & *Myxomycota* p.p. , 452 p. CSIRO Publishing.

Grey P, Grey E. 2005. Fungi down under—the Fungimap guide to Australian Fungi. Fungimap, Royal Botanic Gardens Melbourne. 146 p., over 200 pl., ~150 spp., distribution maps, colour chart.

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BOOK ANNOUNCEMENT

California mushrooms. The comprehensive identification guide. By D.E. Desjardin, M.G. Wood & F.A. Stevens, 2014. Timber Press Inc., 133 S.W. Second Avenue, Suite 450, Portland OR 97204-3527, <timberpress.com>. ISBN 978-1-60469-353-9. 560 p., over 700 colour photos. Price $60